The macdonald Journal

APRIL 1977

THE macdonald JOURNAL

APRIL 1977

lacdonald Journal
olume 38, No. 4
pril, 1977

ditor: Martin van Lierop
lanaging Editor: Hazel M. Clarke
ontributing Editors:
oan Habel
lacdonald Reports
om Pickup
. B. Roy, Agronome,
nformation Division,
linistry of Agriculture of Quebec
usiness Manager:
lartin van Lierop

The Macdonald Journal is published every month by Macdonald College.

Material in this issue may be reprinted editorially without permission; however, credit to the Macdonald Journal would be appreciated, Address all inquiries re editorial matter, advertising, and subscriptions to: The Editor, Box 237, Extension Department, Macdonald College, Quebec, H0A 1C0. Second class mail registration number 0463.

Subscription rates are $3.00 for one year, $5.00 for two years, and $7.00 for three years in Canada. Outside Canada — $7.00 for two years.

Printed by Harpell's Press Co-operative, Gardenvale, Quebec.

In This Issue

Cover: Farm animals are a big attraction for city children, as are farm vacations for the whole family. See article page 3.

ournal Jottings

city people head to the country unwind, where do country eople go? Our lead article "Supplementing Farm Income by roviding Recreation Services" oes not attempt to answer that articular question, but it does uggest numerous ways in which rm families may cash in on the ass exodus from cities and uburbs for holidays and long eekends. Farm homes may be hared with vacationers who, turn, may help with some of e chores, tent and trailer sites ay be erected on the property, unting and fishing facilities may e set up. Not all farm families would be interested in this means of adding to their income; not all farms would be suitable. Before venturing into such a venture there are many questions you should consider — some of these will be answered for you in Professor Fillmore's article.

In the February issue of the Journal Richard Saul mentioned digging up all the old apple tree roots before planting new trees. The reason? These old roots harbour plant-parasitic nematodes. Though brief mention was made in his piece on these pesky little creatures, we have, in this issue, a thorough report on them. Nematodes can play havoc with crop yields; some Quebec farmers, for instance, have had to stop growing carrots in badly infested fields. In his article, Dr. Hogger suggests methods of determining whether or not there are plant-parasitic nematodes in your fields and, if there are, he also suggests ways of attempting to control them.

Where do country people go? Possibly they just stay home and unwind after all the others have returned to their normal nine to five routines.

Hazel M. Clarke

Editorial

Developed in France at the end of the 13th Century and legally accepted in Canada for transactions by the Weights and Measures Act of 1873, the metric system "Système Internationale" or SI is in the final stages of adoption as the only measuring system in Canada.

To many people the displacement and farewell to our old Imperial system will mean severing an old heritage and sentimental ties with the past. The replacement of an antiquated measuring system by the metric system (SI) makes Canada part of the 140 out of 145 member countries of the United Nations (over 90 per cent of the world's population) that are already using or converting to the metric system (SI).

The use of over 30 measuring units for length and area that are more or less frequently used in everyday agriculture will be replaced by two basic measuring units, the "metre" and "hectare" illustrated respectively by the symbol "m" and "ha".

Despite the familiarity of the terminologies of the Imperial measuring system, it is no easy task to grasp the relationship between yards, rods, furlongs, acres and sections, let alone to calculate fractions of these units. Even more confusing is the incompatibility that exists in some terms; the most notable of which is the Imperial or U.S. gallon. Dilution of liquids, particularly in cases of herbicides and pesticides, can become a critical and annoying dilemma, which is compounded by the inconsistent land surface measurements, acres, arpents, etc., encountered particularly in Quebec.

Since the introduction by the government of a White Paper on Metric Conversion in 1971, a Metric Commission was established to launch a program for a complete change over to the metric system.

All sectors of the agricultural industry have been presented, through consultation, with target dates where all units of measurement are to be given in the metric system (SI). These dates have been publicized both by the federal and provincial departments of agriculture.

One major point should be stressed. There is no need for the farmer to buy or replace any of his major equipment because of the new measuring system. However, recalibrations of certain equipment involving volume measurements, such as milk bulk tanks, will be necessary.

The main problem for the farmer will be to familiarize himself with the metric system as target dates approach so that the new measuring units can be used with full confidence in the farm operation.

The most impressive benefit of the metric system is its inherent simplicity. The relationship between a basic unit and its multiple in power of 10 makes for easy, quick calculations with reduced chances of error.

The transaction to the metric system means a complete change in our concept of measuring units. This will be an inconvenience, but it will only be temporary. Once the metric system is established in our everyday usage, there is no doubt that its advantages will outweigh its disadvantages.

Martin van Lierop

Supplementing Farm Income by Providing Recreation Services

**y Professor E. Fillmore,
/oodland Resources and
ecreation,
epartment of Renewable
esources**

/e in Canada are extremely ortunate that governments have aken steps to preserve and rotect areas of special scientific nterest and scenic beauty, but rivate enterprise also has an nportant part to play in providing reas for outdoor recreation. arm land is often ideally suited r providing recreation; it is sually close to the potential arket, it has fresh air and pleasing cenery, and it can often be nverted to recreation use with- ut destroying its agricultural otential.

any types of activities and ervices can be provided by private ndowners — camping, farm cations, hunting and fishing, and ntal gardens. Each of these nterprises will be discussed in tail by examining the specific aracter of each enterprise, the nount of development necessary, relationship to the farming erations, any special qualities eded by the operator, and ways increasing profitability.

rm Vacations

e shift from a rural population an urban population is a latively recent phenomenon in nada and many city dwellers or eir parents look back with easure on their farm experiences. ey want their children and andchildren to share these periences. The chance to rticipate in normal farm opera- ns is an exciting prospect for any city dwellers and farm imals are a great attraction, pecially for children.

vacation farm needs to be thin a day's drive of a large city and close enough to a town that guests can obtain personal necessities, automobile service, and medical care. Many farms may be adapted for vacation use without additional facilities but most will need supplementary sleeping quarters, sanitary facilities, and a dining area. You may be able to construct them yourself, but keep in mind that guests will want to return only if they are comfortable by **their** standards, although they are not expecting elegance.

A review of regular practices may suggest ways to entertain visitors without interrupting your regular farm operations; otherwise, you may have to provide special activities such as hayrides or horseback riding. If a lake or other recreation facility is nearby, you can profit from its drawing power and will not need to expend as many of your personal resources in providing for your guests.

> Outdoor recreation needs... cannot now be met... nor will they ever be met... by the combined efforts of local, state and federal governments alone. These needs... will be met only as we turn to the three-fourths of our land which is in private hands. By this I mean we must encourage the... farmer who owns much of this land to "grow" outdoor recreation in place of some of the crops he now raises. Much of the land where we will find our recreation opportunities in the years ahead is in crops, range, or woodlot today.
> Orville Freeman, former
> U.S. Secretary of Agriculture

In order for a vacation farm to be successful, you must honestly enjoy having people around and meeting and visiting with strangers. You need a knack for conversation and the ability to plan interesting activities for your guests. You must be skillful in guiding their participation in farm activities such as feeding and caring for animals, milking, haying, fruit picking, etc. Good home-cooked meals are a primary attraction of vacation farms. If you don't have a superior cook in the family, you will need to hire one.

Most visitors pay by the week for room and board and whatever recreation privileges they may have. Rates vary widely according to the accommodations and amenities provided.

Camping Areas

Camping is one of the fastest growing forms of outdoor recreation, and judging from the packed campgrounds in the Montreal region, a shortage of high-quality camping spots still exists. There are basically two types of campground customers — transit campers and destination campers. Transit campers are on their way to some destination and usually stay in a campground for only one night. Very few are repeat customers and they often arrive late and leave early the next morning. To cater to the needs of this group, almost any site is suitable, as long as it is close to (and preferably visible from) a major highway. KOA, a franchised campground organization, has become a multi-million dollar business by building campgrounds on sites which are, by recreation standards, often mediocre, but from a transportation standpoint are ideal because they are so close to major routes. KOA campgrounds also provide a service centre which may have a small store, a snack bar, a laundromat, an indoor recreation area, and hot showers.

For destination campsites, access is not nearly as important an

attraction. The attraction may be on your own property, such as a small lake, a fishing stream, or a unique natural area; or it may be a facility nearby such as a national or provincial park, or an important historic site. For destination campgrounds, an attractive site is especially important, because much of the business comes from repeat customers or the recommendation of friends. Such a campground should have trees for shade, level or gently rolling terrain for tent or trailer sites, soil suitable for sewage disposal, and ground cover which is durable and easy to care for. Additional revenue may be generated by renting canoes, rowboats, fishing gear, and other recreation equipment. An alternative to providing tent and trailer sites is renting small cabins. A 144-acre general farm in the northeastern United States now earns more money from its recreation enterprise than from the other farming operations. The farm is adjacent to a large state-owned lake. The enterprise began with the construction of one small cabin equipped with kitchenware, heat, electricity, running water, and bed linen. The season covers 10 weeks. Charges vary according to length of stay, specific accommodations, and number in the party.

Hunting Areas, Shooting Preserves, and Fishing

As hunting on public land becomes more and more crowded, increasing numbers of landowners are marketing hunting privileges. Many farms already provide food or habitat for game animals. Although wild game on your land does not belong to you, you can charge for the privilege of hunting on your property. Services related to hunting can also be offered, such as lodging for your customers, rental of vehicles, camping equipment, hunting dogs, and sale of supplies.

Hunting is usually a secondary source of income for farms. It is carried on for a few weeks in the fall and utilizes land which can be devoted to other uses during the spring and summer. Since little land needs to be taken out of production, the expense of such an operation is small, consisting mainly of habitat improvement. Where holdings are small and upland game is the crop, owners can combine their properties into a single area and lease it to a group of hunters, or they can sell permits by the day to individuals.

If your property is near bodies of water, you may be able to provide shooting sites for migratory waterfowl. Improvements for hunting may be simply the construction of pits and blinds, or it may involve the flooding of fields and the maintenance of wetlands to make them attractive to waterfowl.

Landowners who expect to attract a paying clientele must demonstrate their interest in hunting by promoting good sportsmanship and improving and protecting areas conducive to wildlife production.

A shooting preserve differs in at least three ways from a farm hunting area: the operation depends on pen-raised game; the season is longer; the preserve is the primary business of the operator with farming a supporting activity to raise food for the penned game and to provide cover when the animals are released. Although the birds are usually purchased from a commercial producer, you may want to raise your own game if your preserve is large. Hunting dogs are often a part of the service, and the hunter is guaranteed a chance to shoot and game to take home. Fees are usually based on the number of animals bagged. Additional revenue can be generated by providing services such as meals for customers, boarding and training hunters' dogs, and cleaning and dressing game.

A shooting preserve needs 200 acres of farmland capable of growing good food and cover crops to keep birds on the property. It also requires pens for raising and holding game to be released, and facilities for holding dogs and dressing game. A game or clubroom is highly desirable, since camaraderie is an important part of the attracting power of a shooting preserve.

To operate a shooting preserve, you need to know how to raise and care for game birds and

Sketches, including cover, courtesy D. W. Graham & Associates Limited

unting dogs. You likely will need
o grow some new crops and use
ew cropping patterns.

ishing, like hunting, may use
ither a public or private resource.
you provide access to a public
ke, fishing limits and seasons
ill be set by government
gencies. If you stock a private
ke with your own fish, **you** set
e limits, the season, and, best of
l, the fees. You can increase
evenue by providing lodging or
nt sites, by renting boats and
shing equipment, and by selling
ait.

ll provinces exercise control
ver the harvest of fish and game
y regulating bag limits, seasons,
nd areas where the sport is
ermitted. Governments may also
xercise control over the sale of
unting privileges by private
ndowners.

unting, of course, is not the
nly way wildlife can be utilized
nd enjoyed. Since nonconsump-
ve uses of wildlife are becoming
ore and more popular, you
ay find greater satisfaction in
roviding opportunities to observe
nd photograph animals.

Rental Gardens

Although it has been practiced in Europe for many years, the idea of renting individual garden plots is a relatively new idea in this country. There seem to be many reasons for the rapidly increasing popularity of this activity — the desire for exercise in the fresh country air, rising food prices, the fear of food shortages, concern about pesticides and vitamin content of commercially raised food, and interest in types of vegetables not generally available in stores.

Practices and charges vary widely according to the amount of labour and materials supplied by the farmer. Some farmers merely divide the area into plots of suitable size and rent it to the customer; others fertilize, plough, prepare the soil, and plant those crops which they can sow mechanically. In order to be successful, rental gardens need to be relatively close to population centres so that gardeners can come often to tend their plots.

Closely related to the rental garden concept is the practice of allowing customers to pick their own fruit. More and more owners are opening their fields and orchards to people who want to pick their own strawberries, raspberries, and apples. Farmers could attract more customers for such activities if they would provide picnic tables, drinking water, and sanitary facilities.

Determining Profitability

Before you decide to develop, examine your site, using these five criteria:

1. it has a distinct recreation feature on it or nearby, such as a lake, fishing stream, unusual scenery, or a government park or nature preserve.
2. it is accessible by paved road or near main traffic thoroughfares.
3. drinking water can be made available.
4. it has aesthetically pleasing vegetation and adequate shade for the comfort of users.
5. sewage can be disposed of without creating a public health hazard.

(Continued on page 16)

Are nematodes plundering the fields of Quebec farmers?

by C. H. Hogger,
Research Associate
Department of Plant Science

Plant-parasitic nematodes hidden in the soil can cause economic losses of 10-50 per cent or more by lowering crop yields and/or quality of crops.

What are nematodes?

Nematodes, which are a type of worm, are present almost everywhere there is life. Some are large enough to be seen with the naked eye; some, such as those living in the soil or in the sea, can only be seen with a microscope. They are also called roundworms, threadworms, or eelworms. They are not related to tapeworms, earthworms, grubs, maggots, or caterpillars of insects. Some, such as the large Ascaris and the Trichinella of pigs, are parasites of domestic animals; some are parasites of man, and the pinworm of small children is a good example. Many others, such as the root-knot nematode on tomatoes or carrots are parasites of plants. However, the large majority of nematodes are not parasites, and their role in the web of life in the soil, in fresh water, or in the sea is not well known.

Soil and plant nematodes

All soils in which plants grow, from virgin forests to cultivated fields, contain nematodes. The top foot of one acre of soil usually contains several hundred millions of them. The numbers and kinds of nematodes found reflect the state of the soil, especially its organic matter content and the kinds of plants that are growing in it. Some of these nematodes, maybe 10-50 per cent of them, are parasitic on plants. The rest feed on bacteria or fungi in the soil, or they may be predators and feed on other nematodes or other small soil animals.

Most plant-parasitic forms feed and multiply on or in the roots of their host plants; a few live in stems and leaves of plants.

Symptoms of the presence of nematodes

A characteristic symptom of plant-parasitic nematodes in a field of a row crop is uneven growth. In some parts of a field the crop may have uneven height or the rows may not close uniformly. It appears that the roots are not functioning properly in taking up nutrients and water and in anchoring the plants to the ground. These symptoms are similar to those found in low, wet spots, with the exception that they may occur in areas with good drainage. The infested parts of a field are usually elongated in the direction of the furrows. In pastures, a patchy distribution of clover may indicate the presence of certain plant-parasitic nematodes. In replanted orchards, stunted growth and excessive winterkill of young trees may be due to the action of plant-parasitic nematodes.

General "soil sickness," that is, the inability of certain crops to grow in a particular field, is often due to certain nematodes and other soil-borne pathogens.

Which nematodes are present in Quebec?

Serious nematode problems have been encountered by some carrot growers in the organic (muck) soil areas. The northern root-knot nematode caused galls and forked roots on carrots, which became non-marketable. Some growers have repeatedly used chemical soil treatments; others no longer grow carrots in the infested fields.

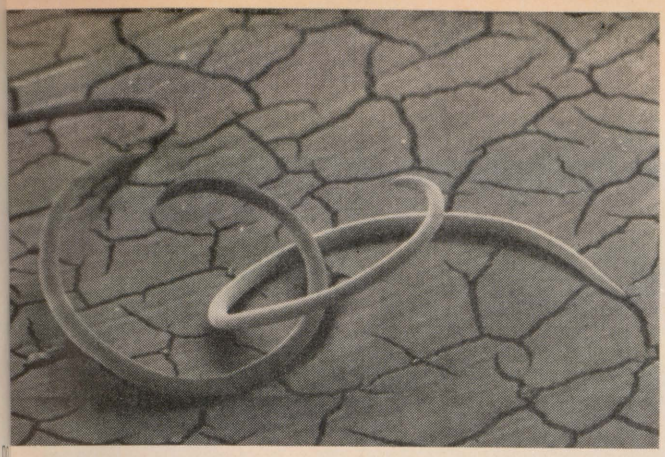
In the area of l'Assomption, high numbers of root-lesion and root-knot nematodes have been found on tobacco. These nematodes were responsible for yield reductions which resulted in economic crop failures. A survey in pastures across the province revealed the presence of a number of nematode pests on legumes and grasses. Similar nematodes have been shown to cause yield reductions up to 25 per cent in Prince Edward Island. They are suspected of contributing to the winterkill of red clover in Quebec.

How do nematodes spread?

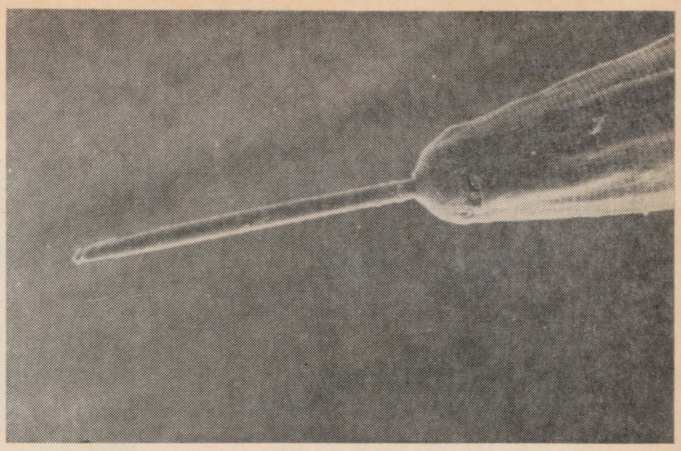
By their own effort, by crawling, nematodes spread at the most a few yards per year. However, any method that moves soil, water or plants may transport the plant-parasitic nematodes contained in them from one farm, province, or continent to another in a short time. Nematodes may be spread by the wind during dust storms, or they may be transported with run-off water from one field to another.

On any farm the ploughs, harrows and other machinery spread clods of soil from one field to another. Trucks which pick up produce in the field may spread lumps of soil on their tires from one farm to another. Small numbers of accidentally spread nematodes may go unnoticed for years until they reach a detectable level. However, one nematode per pound of top soil corresponds to about two million nematodes per acre.

In Newfoundland the potato cyst nematode has been detected after it was introduced from Europe or South America, where it is a



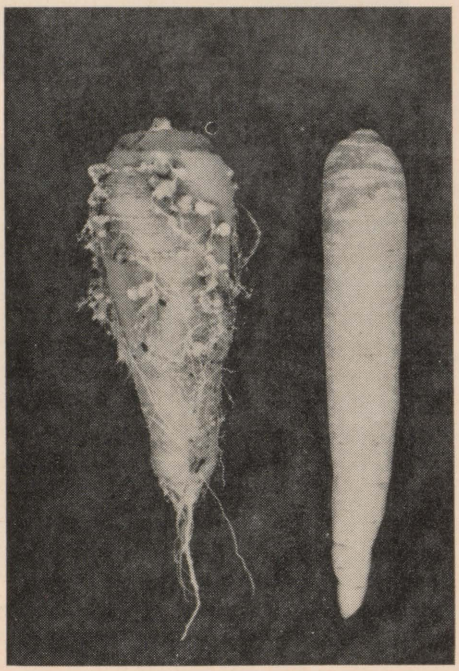
gger nematodes, uncoiled, about 1/8 in. long, photographed the scanning electron microscope (SEM).
ese were found on the roots of maple trees.



Dagger nematode with extended stylet. Length of stylet = 0.003 in (SEM). This stylet may penetrate half-way through a fine root.

rious pest. Strict quarantine gulations are in force to prevent at least retard the spread of is nematode from there to the st of Canada and the United ates. For this reason, cars ming from Newfoundland are eam-cleaned before they are owed on the main land. The matode has also been found Vancouver Island and in New rk State.

Ontario the southern root-knot matode has been causing mage on greenhouse-grown matoes. It probably was imported field-grown tomato transplants m the southern U.S. and is able survive well in frost-protected eenhouses. Now, all plants are spected upon entering Canada d any which have galled roots e denied access.

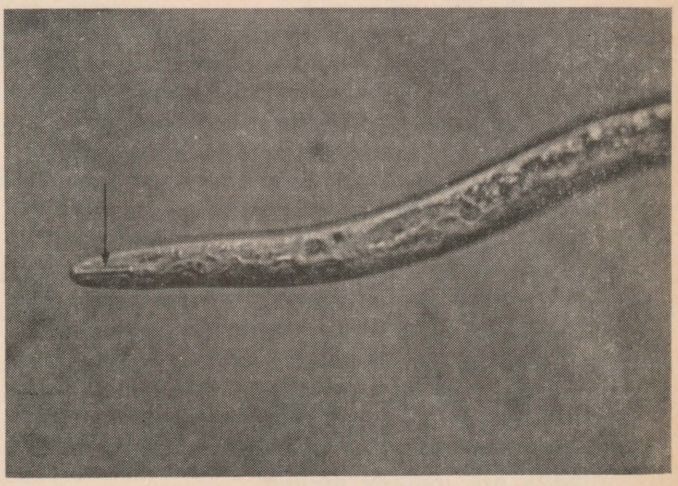


Left: root-knot galls on carrot; right: healthy carrot.

Control of plant-parasitic nematodes

Sanitation: "An ounce of prevention is worth a pound of cure." This saying is certainly true in nematode control. Once plant-parasitic nematodes are introduced into a field, one has to learn to live with them, because permanent eradication is almost impossible and very expensive. Therefore, introduction of nematodes must be prevented. Seed, planting stock, and transplants must be free of nematodes. Seed should be cleaned mechanically, as is done with most commercial seed, particularly certified seed. Planting stock and transplants should be produced on nematode-free soil and may be certified to be free of certain nematodes and other disease-causing organisms. It definitely pays in the long and short run to obtain such planting material at a slightly higher price.

ot-knot nematode juveniles, about 0.020 in. long, otographed in the light microscope (LM). These were racted from the galled carrot shown above.



Head end of root-knot nematode juvenile showing stylet which is used to pierce root cells. Stylet length is 0.0004 in (LM).

Vehicles and machinery, which were used in infested fields, should be thoroughly cleaned before entering non-infested fields. A small mobile steam unit is very effective for this job.

To prevent the increase of accidentally introduced nematodes and other soil pests, diversified crop rotations should be practised. Among some pre-Columbian Indian people in South America it was forbidden to plant potatoes more often than every seven years in the same field. Today we know that it takes this time span to reduce the potato cyst nematodes to a non-dangerous level. Such long rotations appear impractical today in many cases, and other control measures have been developed.

Resistant varieties: One such control measure is to breed resistant varieties. These plants may be immune, that is, the nematodes cannot feed and multiply on them, or the plants may be tolerant, in which case the plant does not suffer apparent damage from the attack of the nematodes. Planting of resistant varieties is particularly economical in low acre value plants such as forage crops. Nematode resistant varieties of a number of crops have been developed in various regions of the world, e.g., tomatoes, potatoes, clover, peaches, citrus, cotton, etc.

Chemical treatments: Another measure is the use of certain chemicals before or at planting. There are basically two types: 1) fumigants and 2) contact nematicides. Fumigants are injected in liquid or gas form six to eight inches deep in the soil. Then the surface of the soil is sealed with a roller, irrigation water, or a plastic sheet. This prevents the gas, which travels through the soil pores, from escaping too rapidly. Most fumigants must be applied three to four weeks before planting to avoid damage to the crop. Contact nematicides are usually applied as granular materials and are then incorporated into the top six to eight inches with a rototiller. They are distributed in the soil with the soil moisture. They can be applied at planting time, and the systemic materials among them will provide also some insect control on the above-ground parts of the crop.

Close-up of galls caused by root-knot nematode.

Mouth opening of a free-living nematode. Opening is 0.0002 in wide (SEM). This kind of nematode is not known to damage plants. It feeds on bacteria on the roots.

Nematicides include some of the most toxic agricultural chemicals. Nevertheless, they are used frequently for high value cash crops such as tobacco, sugar beets, potatoes, citrus, etc., in industrial types of agriculture. Nematicides, like all pesticides, must be used according to the directions on the label. Some crops do not tolerate certain types of nematicides. Improper use may also result in unlawful residues.

Generally, nematicides will kill all types of nematodes, i.e., they affect plant parasites and non-parasites. A few nematodes alway escape the effect of the treatmen Other organisms in the soil are often reduced in number tem-porarily. The desired effect of the nematicides is to reduce the nematode populations in the soi during the first six to eight week of the growing season. This gives the young crop a good start, allows the development of health efficient root systems which wi support strong plants. However towards the end of the growing season nematode numbers are often as high or even higher than if no nematicide had been applie The increase in nematode numbe may be due to larger root system but probably also because nema tode antagonists may have bee killed. Therefore, nematicides often must be applied again in th following years. Yield response

f nematicide applications are ften 20-30 per cent or more. The ost successful control programs, o-called integrated control rograms, include combinations of revention of introduction, crop otation, use of resistant varieties, nd the occasional application of hemicals, when needed.

lant nematode research and eaching in Quebec

esearch is done at several ocations. At the Agriculture anada Research Station in Ste. oy, Mr. J. Santerre is concerned ith nematodes on forage crops, specially alfalfa. At the Research tation in l'Assomption, Mr. M. upré specializes in nematode ontrol problems of tobacco. At ne Research Station in St. Jean, r. T. C. Vrain, a new member of ne staff, has taken up residence nd is concerned with the prob- ms of root-knot nematodes on arrots and their control. At lacdonald College, several gradu- e students are engaged in aining and research under uidance of two nematologists. ne subjects include the more asic aspects of nematode biology s they relate to the local nvironment.

t Macdonald College, Dr. R. H. stey and the author teach gradu- e courses on the biology of ematodes and the plant diseases ey cause. Nematodes are also ubjects for study in the diploma nd undergraduate plant pathology ourses. At Laval, Mr. J. Santerre aches in a few lectures the ractical aspects of nematology.

ampling for nematodes

o find out if nematodes are esent, affected plants must be g up in such a way that their ots can be examined and com- ared with those of healthy-looking ants. If the sick-looking plants ave large galls on their roots, e presence of nematodes is uite certain. If the roots of the uspect plants are smaller or anched in a different pattern, e case is often clear also. In any vent, separate soil samples must be taken from around the roots of affected and healthy plants, similar to samples taken for soil analysis to determine fertilizer need. It is, however, important not to let the soil dry out. The soil samples, less than one pound each, may be packed in plastic bags, tied, and sent to a laboratory, where the nematodes can be extracted and identified with a microscope.

Laboratories for sample examination

At l'Assomption, soil samples from tobacco fields are processed regularly, and recommendations for treatments are given. Also, at Ste. Foy, soil samples are examined frequently and diagnosis of problems is made. At Macdonald College in the Department of Plant Science, to date only occasional samples sent in by Quebec farmers have been processed. However, if demand warrants it, an expanded service similar to the Soil Testing Service could be established in the future. Present facilities and personnel do allow processing of a limited number of soil samples for nematodes.

Necessary work in the future

A few nematode surveys have been made in the province. They indicate the presence of potentially dangerous nematodes, and more surveys are planned for the coming season. Research is now needed to determine at what numbers these nematodes reduce yields measurably under the local conditions. For tobacco and carrots this work has started.

As well as the need for more research, farmers should also become aware of the possibility of nematode damage to their crops. Suspected fields should be reported to the agronomes and/or the research stations, and soil samples should be taken and sent to a laboratory for examination. On the basis of this examination and the individual conditions of the farm, a control program can then be suggested.

Most problems caused by plant-parasitic nematodes appear to be man-made. Accidental introduction of nematodes and lack of proper rotation are factors which can lead to great damage when a crop is under stress due to lack of water and/or nutrients, or damaged by other causes such as insect or weed infestations. Therefore, any nematode control program must be a part of the overall crop management program. Future research on nematode control will show how the described control measures can be best applied under the conditions of Quebec agriculture.

Further information

More information may be obtained by contacting the Canada Agriculture Research Stations at l'Assomption, Ste. Foy, St. Jean, or the author at the Department of Plant Science, Macdonald College, P.Q., H0A 1C0 or by telephone: 457-6580, extension 309. Publications on nematode problems and their control are available from: Information Division, Canada Department of Agriculture, Ottawa, Ont., K1A 0C7. They are: Publication 1375 "Orchard Replant Problems"; Publication 1465 "Control of nematodes in fluecured tobacco in Ontario"
Canadex 628
"Nematodes cut vegetable yields"
"Nematode problems in greenhouse vegetables"
"Nematodes in rhubarb and damage to rotation crops"
"Nematodes in ornamental nurseries"
"Selection and use of soil fumigants"
"Nematode control — some principles of soil fumigation"
"Nematicides in the soil environment"

Macdonald Reports

by Joan Habel

DIETETICS — NEW INTERNSHIP PROGRAM

Since last May, the staff of the Dietetics Major in the School of Food Science have been restructuring the program of practical experience for their students. Instead of the previous 40-week internship in hospitals and institutions during final year and following graduation, the new program, "Stage of Professional Formation", will divide this period into four levels of learning, beginning with a week of orientation. Along with their classroom theory at the College, students will spend a total of six weeks in first year and eight weeks in year two, working in the areas of food administration and nutrition, in the Montreal General, Royal Victoria, or other affiliated hospitals. For 10 weeks during third year and 16 weeks following graduation, they will continue to study in these hospitals; in addition, they will be involved in programs of community nutrition in other institutions.

Many practical assignments are being designed to help the students develop the skills needed to successfully practise the profession of dietetics. They will work with the medical team in the treatment of diseases which involve dietary control, for example, diabetes, renal and coronary diseases. Such diverse experiences as learning the ins and outs of organizing a smooth-running hospital kitchen and teaching nutrition to individuals will give the student an opportunity to participate in the real world of dietetics very early in his or her training.

This participation will help students to learn their strengths and their weaknesses, to discover their own individual centres of interest and develop them over the undergraduate years. The internships are actual credit courses. Students will advance at their own rates and will be evaluated by the hospital personnel according to guidelines set by the university.

Dietetics is a vast field, involving work with people in all age groups, both in the community and in a specialized hospital environment. The new plan for "Professional Formation", which will be phased in completely by spring, 1979, should better equip graduates to serve the whole community well.

For more information on the Dietetics Major, please contact the School of Food Science, Macdonald College, P.Q., H0A 1C0.

RIGHT-HANDED AND LEFT-HANDED TOMATOES?

Yes, its true — it seems that plants can be right- and left-handed, too! A few years ago, Anthony Davis, an Indian scientist, came to Macdonald to give a Plant Pathology seminar. During his visit he mentioned an interesting observation which he had made on coconut palms in the course of another experiment. Leaf arrangements varied; on some trees, the alternate leaf arrangement spiralled around the trunk in a clockwise direction and on other trees, counterclockwise. He also noticed a 20 per cent difference in crop yield between the two. Finding this report most interesting, Dr. Bernie Bible, of the Plant Science Department at Mac, decided to experiment on other crops.

Working with tomatoes and peppers, which are both plants with alternate leaf arrangements, Dr. Bible first established his definition of "right-handed" and "left-handed" (see photo). With one leaf of a plant directly in front of you, labelled (1), a right-handed plant has leaf (2) growing to the right (counterclockwise), whereas a left-handed plant has leaf (2) growing to the left (clockwise). This fact can be identified about four weeks from seeding; before that the first leaves tend to grow opposite each other and do not show spiralling. The incidence of lefts and rights is about 50:50.

To study yields, careful field trials were conducted in which plants started in the greenhouse were set out in segregated plots. After the fruit was harvested and weighed, the results showed that the right-handed tomatoes

While Eszter Schwenke searches, Joan Habel watches the new CAN/OLE in operation.

veraged 15-20 per cent higher ields, (more fruit, not larger ize), peppers 20 per cent higher, nd that the plants themselves ere a bit bigger.

Vhy does this happen? Nobody nows, but it has been proven hat this trait is not inherited. ome thought has been given to he fact that since the right-handed lant spirals in the same direction s the earth's rotations, it may ore easily take up nutrients — he result could be that both the lant and the crop might grow etter. The relationship between he position of the leaves to the unlight was studied, using north-outh and east-west rows in plant-g, but no meaningful difference as seen in the Macdonald ollege experiments.

Vhat are the benefits? At first lance, it would seem that we now old the key to consistently igher yields in tomatoes and eppers. But Dr. Bible quickly xplained that at the present me his findings are simply a curiosity". Although the main tem of the plant might be right-anded and show higher yields, ide branches may be left, and otential gains may be negated. Ve might look forward to higher ields in the future, if scientists arn how to control the directions f spiralling in plants with lternate leaf arrangements. The ossibilities are certainly there.

CAN/OLE COMPUTER IN THE LIBRARY

Any ideas that computers are clinical monsters out to conquer the world (too many late movies!) were quickly dispelled at the sight of the new computer terminal in Macdonald College Library. CAN/OLE — Canadian On-Line Enquiry — the new "toy" of Eszter Schwenke, our Reference Librarian, looks very much like a streamlined typewriter and can be linked into the Computer Centre at the National Research Council in Ottawa.

This little machine is making researching much easier for staff and postgrad students. Before we had CAN/OLE, a person studying a certain subject (let's use thistles as an example) may have anticipated weeks of work in the Library, searching through the Biological Abstracts and Bio-research Index for all the published titles on the thistle tribe. Now, as an alternative to this manual search, the Biosis Previews in CAN/OLE contain many thousands of references from journals, conference proceedings, theses, books, etc. on all aspects of the life sciences. To obtain the references on thistles, Mrs. Schwenke simply called the CAN/OLE computer on a special phone, plugged the phone into the terminal, typed the assigned Macdonald College password and the coded commands for the information requested. In a search that took the computer in Ottawa only about 10 minutes, the terminal printed out that there were 117 references available! Computer time for this service costs $55 an hour; if 25 or more references are found, Mrs. Schwenke has the list mailed from Ottawa for $1 rather than incur the expense of lengthy print-outs on the computer terminal. In the case of the thistles, since the computer search yielded so many references, the print-out was mailed.

The researcher works with the librarian during the search; together they guide the coded questions until they receive the specific information they require. Once the list of references is obtained, the researcher can locate the material he or she needs in the library with very little trouble.

Most of the users to date have commented that "CAN/OLE is a real timesaver and a great asset to the College Library". And after its astoundingly speedy and efficient performance, the computer has shown that it really has a sense of humour, too — as it signs off, it has been known to make a spelling mistake!

HINTS ON HAY

It seems there are as many different haying practices as there are farmers. Certainly each district appears to have adopted its own set of "rules" about what crop to grow, when to cut, how often to cut, etc. These haying habits have often evolved over many years because of local weather conditions, soil conditions, progressiveness of the region or resistance to change. But a common goal for most forage producers should certainly be to grow and harvest good yields of high quality, low-cost feed for their livestock.

Professor Norman Lawson, our "forage man" at Macdonald, discussed several points in a review of good forage management:

1. Quebec is swinging to more and more stands of alfalfa as a

(Continued on page 16)

The Family Farm

Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

QUEBEC CA APPLES CHOICE PRODUCE

CA apples is not a variety imported from the United States, Africa or any other foreign country. It is a Quebec fruit stored under controlled atmospheric conditions and is thereby available year round to the consumer who continues to enjoy its right-off-the tree taste and firmness. These characteristics are all the more important since 60 per cent of the time Quebec apples are consumed fresh.

Quebec has some 1,500 apple growers with orchards containing an approximate 1,000,000 trees in an area of 25,000 acres, nine-tenths of which are found in the south-west of the province. As a result, 30 per cent of the province's apples are harvested in the Rouville region, 15 per cent in the Missisquoi region, 15 per cent in the Huntingdon area, and 15 per cent in the district of Deux-Montagnes. A large number of new trees, including the dwarf variety which is highly favoured by a few progressive growers, have been planted in the past few years. These young trees promise a marked increase in production in the near future. The average annual production of 5,400,000 bushels around 1960 climbed to 6,000,000 bushels by 1971 and in the following years.

This increase has been brought about by the growing popularity of the fruit not only in Quebec but also outside the province. To meet market demands our apple growers have had to adopt new methods of farming and fertilization which quintupled yields during the last quarter century. Moreover, modern storage methods have resulted in improved conservation of the fruit.

From Cold Storage to CA Storage

An apple is a living organism and as such it breathes, burns part of its sugar in the presence of O_2 (oxygen), gives off CO_2 (carbon dioxide) and loses moisture through transpiration.

Kept at room temperature (21°C or 70°F), it loses its qualities; in just two or three weeks it softens, becomes more fragile, prone to bruising, less sweet and loses its original special tartness. In the past, in order to control deterioration, producers did not have much choice — the only means of conserving apples was to keep them in naturally cool storages.

Before apple growers could revert to installed cold storages, they had to wait for the necessary specialized equipment to be manufactured and to be made available to them. When the apple crop is immediately placed and conserved in such storages where the constant temperature is slightly above 0°C (between 32° and 33°F) the fruit's respiration slows down and its life is thereby prolonged. At this temperature, the fruit remains fresh and tasty four times longer than it would at 21°C or 70°F.

Another more effective method of conserving apples appeared with the introduction of controlled atmosphere storages. CA storage allows for a slowing down of the chemical reactions which continually take place in the apple and consequently the fruit ripens later and retains the harvest-time crispness and fresh taste sought by apple lovers. Such method of storage reduces the respiration of apples to a minimum by controlling the quantity of O_2 and CO_2 in the air and by maintaining a temperature of 2° to 3°C (36°F). This slowed down life resembles the hibernation of animals.

In short, what happens in CA storages is that apples which have been picked at a specific time of maturity are immediately cooled in dry rooms of limited capacity. As soon as a room is full, the door is tightly sealed to prevent any circulation of air. At this time the air inside contains 21 per cent oxygen. Three weeks later, owing to the respiration of the fruit, the proportion of O_2 in the enclosed air drops to four per cent or five per cent and that of CO_2 climbs to three per cent or four per cent. At this time, the the apples are dormant. An apparatus purifies the air in the room by maintaining the percentage of CO_2 at three per cent and four per cent and the amount of O_2 at the level required for the continued, although slowed-down respiration of the fruit. Technicians ensure smooth operation by making regular checks. CA storage is supervised by inspectors from the Quebec Department of Agriculture.

A Few Statistics

About half of Quebec's annual apple crop is stored for some period of time.

ifty per cent of the 3,000,000 ushels harvested are placed in old storage (in a total of 200 ooms) and the other 50 per cent s kept in CA storage in about 0 rooms.

After fall harvest right through o the following June, customers nay enjoy apples at their very est. Without CA storage, certain arieties of juicy apples such as he McIntosh, which accounts for 5 per cent of the total apple roduction in Quebec, would isappear entirely from food stores y the beginning of the year.

The importance of CA storage nd other modern methods of onserving apples is better understood in light of the following:

- the annual apple production earns Quebec growers between $10,000,000 and $17,000,000;
- this production makes up two-thirds of our total fruit production;
- the average per capita consumption of apples in Quebec is 29 pounds per year;
- our exports of fresh apples reached 400,000 bushels in 1971, the United Kingdom, the United States, and Sweden being our principal buyers.

$380,000 Subsidy for the Ottawa Valley Region

The Minister of Agriculture, Jean Garon, recently confirmed the ransfer to his Department of unds in the amount of $380,000 or regional development, applicable to the Ottawa Valley Region during the 1976-77 fiscal ear. These funds come from the Quebec Board for Planning and Development and are part of an assistance program for agricultural production and marketing

With these funds, the government ntends to give priority to the milk and beef cattle sectors, as stressed by the Ottawa Valley development plan. A major purpose of the program is to provide direct assistance to producers; however, funds are reserved for setting up a regional auction and providing the required technical staff.

Finishing Beef Cattle

The beef cattle sector will receive the major share of sums allocated. According to Mr. Garon, it is of prime importance that producers in this region, which accounts for 25 per cent of the beef cattle in Quebec, be encouraged to finish their own livestock.

Traditionally, calves born on farms in the Ottawa Valley have mainly been sent to feedlots in Ontario. The meat produced is afterwards shipped back to Quebec which consequently misses out on an important part of its agro-food industry.

Farmers of the Ottawa Valley region who wish to include fattening in their activities may receive a grant of up to $2,000 a year over a three-year period for land and building improvements, purchase of livestock and machinery or the construction of silos.

The Minister believes that in addition to increasing the productivity of cultivated areas and thereby raising the producer's gross income, the program is highly in keeping with the aims of agricultural self-sufficiency promoted by the Quebec government.

Establishment of a Regional Auction

This assistance program for finishing beef cattle would be entirely useless if adequate marketing structures were not set up in the Ottawa Valley. At present, the region is completely lacking in such facilities, and therefore farmers must travel over 100 miles to bring their livestock to assembly points and auction sales. Such conditions handicapped them right from the start and gave them little incentive to develop their herds.

Within a short time, the Department's measures in this area should permit the opening of a regional auction. Talks are in progress with the various regional organizations to determine the location of the auction and the terms and conditions of support from the government.

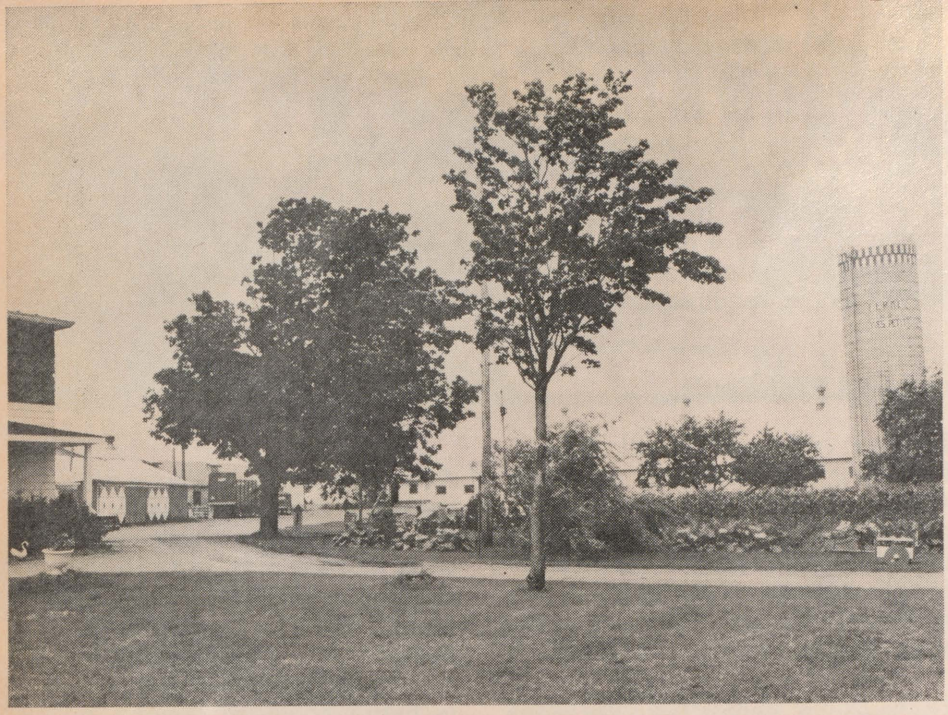
According to Jean Garon, this aspect of the program is in keeping not only with the above-mentioned aims of autonomy and self-sufficiency but also with the government's intention to provide equal opportunity for the Ottawa Valley producers and their counterparts in better equipped regions.

Aid for the Transfer of Cream and Industrial Milk

The Ottawa Valley is one of the regions of Quebec with a certain number of farmers who specialize in the production of cream. In view of the very low prices obtained by these producers,the transfer of some of them to the industrial milk sector appears to be the only solution to keep them in agriculture. A maximum subsidy of $2,000 per year for at least three years will be granted according to conditions already set for the farmers concerned.

Technical Staff

To implement these programs, technical and administrative help will have to be sent into the region. These credits should make possible the hiring, on a temporary basis, of four fieldmen, a regional supervisor, and an office employee. These positions are for the duration of the application of these measures.



GOOD RETURNS FROM IMPROVEMENTS TO FARM GROUNDS

According to Gerard Caumartin, specialist with the Quebec Department of Agriculture, improvements to farm grounds bring good returns. It is an important means of improving the quality of rural life, increasing the value of farm property, ensuring farm succession by keeping the young on the farm, and making the countryside more attractive, thereby contributing to the development of tourism which benefits the entire region.

Mr. Caumartin recommends that a sum equal to 10 per cent of the cost of the house be spent on improvements. In certain countries some farmers are known to spend as much as 40 per cent of this cost for the same purpose. Such a percentage is easily reached if a swimming pool, patio, an attractive fence, barbecue or recreation area are included.

It would be unreasonable to want to do everything all at once. Rome was not built in a day. Therefore, Mr. Caumartin advises to proceed a step at a time according to spare time and financial means available. Little does it matter whether a project is completed in five or ten years; what is important is that a good plan be drawn up at the start and that it be approved by a landscape architect.

Three areas should be considered for improvements.

1. First of all there is the area bordering the driveway or road and open to public view. It should be orderly and neat at all times and tastefully landscaped.
2. Then there is the more private area used as a vegetable or as a flower garden. Usually reserved for leisure and guests, it may be set up with a table, chairs, garden umbrella, barbeque, outdoor games, swimming pool, pond, patio, attractive fence, flower beds, flower boxes. It is the area requiring the greatest outlay not only in terms of money but also in terms of creative imagination.

3. Finally there is the service and delivery area reserved for the postman, milkman, etc. This is where we keep the trash cans, set up the clothesline, storage shed for wheelbarrow and garden tools, work area for the preparation of top soil, etc. But what procedure should be followed when making improvements? Mr. Caumartin makes the following suggestions.

Soil and Lawns

A good stone-free soil which has been loosened and fertilized should slope towards the road at an incline of three to six inches per 100 feet. Steps should be taken to avoid a steep slope which would dry up quickly in summer, make mowing difficult and make the house appear squat.

A lawn requires continued care and a good program of fertilization.

Trees

Trees will help to mark out the area, add height and set off the house and grounds. They will be appreciated more and more as they grow. At planting, however, the gardner should always ask himself what they will look like in 15 to 20 years' time and what purpose they will serve — will they shield from strong winds, provide shade or conceal an unpleasant sight, The location and orientation of the house are other factors to consider.

As a rule, a tree should be planted at least 30 feet from the house, 40 feet from a drain or septic tank, and 20 feet from another tree. It is best to plant the biggest trees on the east and south side of a house.

The most common evergreens include the cedar, spruce, pine, fir and hemlock which may be used to obtain pleasing contrasts and beautiful winter effects. However, it becomes monotonous when there are too many of them.

Deciduous trees are much more varied. It is more difficult to choose from among them owing to the number of characteristics which must be taken into account: hardiness, longevity, shape, height, spread, colour of bark and of leaves, scent of flowers, nature of the fruit, etc. For example, a tree may be chosen for the colour of its bark, shade or beauty, e.g. weeping willow. The selection should blend harmoniously with the setting.

Avoid choosing trees which are always shedding their twigs, leaflets or flowers and whose branches break off easily in harsh weather conditions as is the case with poplars, laurel leaved willows, Giguère maples, silver maples, acacias, etc.

Shrubs

Whether big or small, shrubs serve more or less the same purpose as trees, that is they may border a property, screen an unattractive sight, shield from the wind or are simply ornamental. The colour of the bark and leaves, the profusion and nature of the flowers and berries will guide in making your choice.

Their location should be determined by their preference for sunlight or shade. Their arrangement should be proportional to their height and spread. You can improve grounds with a mere 10 to 15 shrubs — there is no need to plant an entire forest.

Flowers, Climbers and Rock Gardens

Flowers are as important as trees for improving grounds. When planting annuals, try to match two or three colours together. Perennials of varying heights and colours are for borders and should be chosen so that there will be flowers in bloom throughout the growing season. The tallest should provide shelter for those which thrive best in the shade.

Flowers are planted along lawns and hedges and are arranged in flower beds, boxes, and pots.

Flower boxes should be wide, 8 to 10 inches deep and filled with good garden or forest soil. Depending on their location, they will be planted with flowers which have particular sun or shade requirements. They should receive a good watering only once or twice a week, that is about two or three gallons of water for a box measuring five to six feet in length.
Climbers, rose vines and clematis will make your grounds more attractive.

Rock Gardens, Patios, Garden Lights

Rock gardens are difficult to keep. They contain shrubs, plants with coloured leaves (silver, red, yellow, etc.), annuals and perennials, bulbs and alpine flowers. The latter are easy to cultivate, requiring little watering and fertilization. They bloom early in spring and may be propagated by cuttings, seeding at the end of July or division in August. For such gardens, avoid plants which bloom all at the same time and carefully choose rocks of similar colours, shapes, and rough texture.

An attractive lawn with trees and shrubs is often sufficient for improving the appearance of the grounds. However, flowers heighten the setting even more so. The addition of a game area, swimming pool, swing, rock garden, patio, etc., is a good way to complete improvements.

Materials such as wooden discs, bricks, concrete blocks, marble slabs may be arranged in a variety of ways to form a patio or a sun terrace.

Garden lights are also recommended. Good artificial lighting accentuates the beauty of a garden and gives plants a different aspect.

When such lights are installed, it is possible to remain longer in the garden on warm summer evenings and, with the right colours, to achieve a wonderland effect in winter.

GETTING THE FARM VEGETABLE GARDEN READY

Roland Gilbert, agronome
Horticultural Advisor
Quebec Department of Agriculture,
Regional Office, Quebec Region

Planning for the vegetable garden should be done well in advance, before the first days of spring if unnecessary problems are to be avoided. It is therefore a good idea to make an accurate measured drawing to scale of the garden layout and to consider beforehand the kinds and varieties of vegetables best suited to particular needs.

The beginning amateur would do well to look into the abundant literature available on the subject. The Quebec Department of Agriculture through its Information Service and the Federal Government alike offer several publications at no extra cost. Bookstores carry a good stock of material especially prepared for the beginner. Seed catalogues are another valuable source of information.

The experienced gardener, on the other hand, should review the problems encountered the previous year and make the necessary enquiries to avoid repeating the same mistakes. He should at this time take stock of his plant health supplies and check to see that his tools are in good working condition.

The growing season of vegetables varies not only according to type but also according to variety. Taking corn as an example, the Seneca and Early King varieties produce their ears much sooner than the Seneca Chief and Jubilee varieties. There are varieties of the same name but a different rate of germination, e.g. Bantam Doré of which there is an early and a late variety. This is why the amateur should seed according to the length of the growing season of each variety.

Some beginners produce their own seed. However, this is generally not recommended since there is a risk of gradual deterioration of specially F_1 seeds. Thus, new seeds should be used each year. It is a general fact that the percentage germination decreases from year to year and that this decrease is already marked in the second year.

Various containers may be used for seeding. It should be borne in mind, however, that each variety requires particular care, depending on its rate of germination and growth. The wooden box which is generally used does not always give the best yields. It is therefore advisable to use individual seed pans. The name

and variety of the vegetables in addition to the date of seeding should be indicated. The same seed pans are used for transplanting. It is good practice to sterilize the soil; all containers, with the exception of plastic ones, should also be sterilized. This is done simply by placing the culture medium (usually a mixture of sand and organic soil) into an oven for 20 minutes. Such treatment helps to prevent "damping off" and the germination of a good number of weed seeds. Damping off is a disease caused by a fungus and resulting in the death of newly sprouted plants.

Indoor seeding is usually done much too early. Lack of light causes wilting and elongated shoots. Indoor temperatures are generally much too high and difficult to regulate. Such factors combined with poor ventilation constitute ideal conditions for producing weak seedlings. This can be prevented to a certain extent by placing the boxes near a large east window and by lowering the temperature.

The size of the vegetable garden may vary according to space available and to the time devoted to it. It is impossible to produce enough vegetables to meet all of a family's needs. Someone with more land who wants to produce greater quantities should bear in mind that about 1/10 acre is required to produce sufficient fresh vegetables to feed a person during an entire year.

A detailed plan of the garden will help in spacing out the seeding and planting of the various vegetables and in securing maximum yields. It is important to begin now and to draw up a program for the year.

(Continued from page 5)

An area may be considered excellent if it meets all of the above requirements.

Even if your site is suitable, don't make a decision until you can answer the following questions:

- How far must my potential customers drive to reach my farm?
- My competition: how successful is it? Where is it located?
- Are there any government regulations which I must follow?
- What can I learn from similar operations in other areas?
- What assistance will I need to manage and operate this enterprise?
- If it doesn't prove successful, how much do I stand to lose?

Where to Get Help

Your local agronome is probably the first person you should talk to. If he doesn't have the information, he will likely be able to tell you whom to contact.

For those interested in farm vacations, the Quebec Ministry of Agriculture has published a brochure on the subject. It can be obtained by writing to:

Information Division
Ministry of Agriculture
200 St. Foy Boulevard
Quebec City, Que.

In the last few years, many books have been published which detail the establishment and operation of rural recreation enterprises. One of the most helpful is *Rural Recreation for Profit*, by Clodus R. Smith, Lloyd E. Partain and James R. Champlin. It is printed by Interstate Printers & Publishers, Inc. of Danville, Illinois.

In Quebec, a potential source of assistance is a Conseil Regional du Developpement. If your region doesn't have one, you may want to organize a regional tourist association to plan recreational developments that will support each other, to sponsor country fairs and special events, to share advertising costs, and to contact government agencies about providing roads, policing, and other services.

Hints on Hay

(Continued from page 11)

high yield, high protein hay crop. Acreage has increased from 250,000 to 400,000 in the last six years. If a farmer has good soil depth and can achieve the right conditions for growing alfalfa — good drainage, pH of six or higher — he should consider this crop.

2. Possibly the weakest point in hay management is the lack of fall fertilizing. High potassium fertilizer (0-15-30 or 0-20-20), is recommended at an application rate of at least 200 lbs/acre. The potassium "acts like an anti-freeze", helping to prevent winterkill of the crop.

3. Quality, in terms of digestibility of nutrients, is much higher in the young plant. Fact is, as the crop matures, digestibility and protein content lowers. Farmers should take at least two and possibly three cuts of hay per season, not just for increased volume, but to ensure that they are harvesting a young, tender crop, free of "woody" stems, which are overly mature and largely indigestible.

4. Cutting time **is** important. First cut should be taken, ideally, around June 15-20, and second cut in the latter half of August. After the first frost, a third cut can be made, or cattle can be lightly grazed, providing the ground is not too wet. In general, cutting in September is poor management; hay crops need at least four weeks of recovery time before the first frost to establish the needed root reserves for winter survival. Research at Macdonald College has shown that if the hay crop is not stressed in any way — if it has optimum conditions, good drainage, high pH and proper fertilization (especially potassium) — the time of the last cut is not as important.

5.With regard to regrowth after cutting, timothy and bromegrass require early cutting to produce a good aftermath; alfalfa and red clover are not as fussy.

Harvested as dry hay or haylage, careful management of hay fields = enough good quality low-cost feed = raised farm income!

This Month with the QWI

A Marvelous Trip

Clarendon branch (Pontiac Co.) of Quebec Women's Institutes was formed in April, 1917. Since that time this branch has been very active, living up to the motto "For Home and Country."

At the present time we have eight life memberships; five of these ladies are very active in the branch.

Each year the members enjoy a bus trip, this year being to Northern Ontario and the Manitoulin Islands. On September 27 Clarendon members left the Dr. S. E. McDowell school in Shawville at 7 a.m. for the Manitoulin Islands. We travelled by Portage du Fort to Haley's, hence to Highway 17 to Pembroke and North Bay. We enjoyed our lunch at Sturgeon Falls and proceeded on to Sudbury. We followed the Trans Canada until we reached Highway 68, through Espanola, for some 30 miles. This route takes the tourists through a land of countless lakes and islands. The highway hops through the waters of northern Georgian Bay until it nits the big swing bridge. Once across, you're on the largest fresh water island in the world. When you drive on this one lane bridge that connects the island to the rest of the world, you have to shift mentally for you're moving into a world where things move more slowly.

Located in the northern tip of Lake Huron, about 80 miles southwest of Sudbury, it is inhabited by 10,000 people who have been faced with hardships. It is also referred to as Rainbow Country, as was shown on CBC. Early Indians believed the island was the home of their god "Manitou", thus the name.

It is a beautiful land of clear lakes, rail fences, struggling farms, and excellent fishing, hunting, and beef cattle.

The largest town, Little Current, has a population of about 1,600 and is at the southend of the landmark swing bridge. It is also where the largest one-day stock sale in the world is held.

At West Bay some of the ladies bought souvenirs at an Indian handicraft shop. We also visited a fish hatchery at Sandfield. We came up around the eastern side of the island, passing Manitou Lake, through Little Current, over the bridge once more, and back to Sudbury where we spent the night at the President Motor Hotel. A trip for some wouldn't be complete without Chinese food so some went out and some enjoyed a meal at the hotel.

On Tuesday morning, September 28, we started out at 9 a.m. First we enjoyed a "shopping spree" at a shopping centre, then on to North Bay where we enjoyed our lunch. We came home by Highway 11, through Huntsville, continuing on through Algonquin Park. Here we stopped at the museum and saw a film on the park. The autumn colours along the way were gorgeous. We had our dinner at Pembroke and then continued home, once more through Haley's to Portage du Fort bridge and into dear old Quebec. We arrived back at our destination tired but well pleased with our trip.

Dears Mrs. Nugent,

Your letter in a recent Journal has spurred me on to write of my homecoming from our WI meeting on Saturday afternoon, January 8.

When I unlocked the door and went into my converted schoolhouse home it seemed rather cool. As I approached the thermostat, I turned on the light. A whirr flew up in front of me—t'was a large bird. He circled around and landed on my jug shelf. (I collects jugs), sat peering at me for a moment, then took off and perched on a top curtain rod. Fearing lest he'd try to land on the antique hanging lamp or perch on an antique wall lamp, I dared not try to shoo him out alone. I called my neighbours across the road (my brother, Weston, and his wife, Ruth). Ruth came right over. By this time the bird had whirled himself back on to the high jug shelf.

"Oh, that's a hawk", said Ruth. The hawk, sitting very alert, was all ready to take off again, which he did and landed on a picture, directly over an antique wall lamp. (Think I, there's a goner.)

By this time Ruth had both the porch and outside doors wide open and lights on outside. I turned off all inside lights. He immediately whirred once again, this time straight for the outdoors. He struck the porch wall, partially stunned, he fell to the floor, quickly righted himself, got on his feet, and made for the outside. Thence he took off into the bright moonlit night.

We wondered how he had got in, them we noticed a pane broken in an outside window, and another broken in the inside, both low down. Glass was shattered all over the counter beside the window and on the floor. We assumed he had been chasing a smaller bird in the daylight, and had gone through the two

panes of glass. The next day we found a pane broken in the inside of the very top of a window. Evidently, he had tried to escape through this window.

He only broke two old patched-up jugs, but he knocked over a lamp chimmey and another antique jug.

One could say that he must have been an Irish hawk, as he left behind a green calling card on the arm of the cream chesterfield.

Mrs. Alice Muir.
Megantic County.

Huntingdon Highlights

Among other events during the year, a card party was held at the Herdman Hall. The attendance was large and, therefore, the event was financially successful.

Various donations were given: for youth entries at the Huntingdon Fair, to Meals-on-Wheels, to a family who lost their home by fire, for a gift coupon for UNESCO. Time was also "donated" by serving refreshments at the Senior Citizens' Club. Members are saving special stamps for the ACWW Conference.

A new member Mrs. Von Brentani, who was the delegate to the Annual Convention, was very impressed and gave an excellent report. She also won two prizes at the Huntingdon Fair.

Another new member, who is a nurse, gave a demonstration and advice on how to care for a person suffering from a heart attack. A representative from C.L.S.C., Huntingdon, gave a talk on the various services which this group offers freely to the public.

A happy time was had by members and husbands at a smorgasbord followed by cards which was held at the home of Mrs. C. Anderson.

The Mary Stewart Collect

Mary Stewart was principal of the High School at Longmontt, Colorado, in 1904 when she joined a Fortnightly Club and began to take an interest in the accomplishment of women working together. Later this club became a member of the General Federation of Women's Clubs through the effort of an outstanding woman, Mrs. Ira Herron. To her Mary Stewart first read the Collect.

She said of it. "I called it a 'Collect for Club Women' because I felt that women working together, with wide interests for large ends, was a new thing under the sun and that perhaps they had need for special petition and meditation of their own."

When the women of England began their Women's Institute work, Mrs. Alfred Watts introduced the Collect and it is now used where ever English-speaking women work together.

This prayer now has an official place on hundreds of programs of the major organizations of English-speaking women, including the FWIC. Miss Stewart held important educational positions in Colorado, Montana, and California and did pioneer work in junior guidance as Assistant Director of the United States Employment Service, Department of Labour, but she is best remembered as the author of the Club Women's Creed. As such her memory will always be held near and dear by the members of all Women's Institutes.

(Taken in part from Journal article by Mrs. Hazel Coates — April 1951).

Swedish Meatballs

1½ cups soft bread crumbs
1 cup light cream
½ cup chopped onion
1 tablespoon butter
1½ teaspoons salt
dash of pepper
¼ cup finely chopped parsley
¼ teaspoon ginger
dash of nutmeg
¾ pound lean ground beef
½ pound ground veal
¼ pound ground pork

Soak bread crumbs in cream about 5 minutes. Cook onion in butter until just tender. Combine these two and add seasonings and meats.

Beat with a beater at medium speed for 5 minutes. Make small meatballs. Roll the meatballs around in a frying pan to brown all over.

Gravy

Make a gravy of:

2 tablespoons flour
¼ cup cold water
½ teaspoon instant coffee
¾ cup canned condensed beef broth

Add the meat balls to the gravy and cook slowly about 30 minutes.

Dear WI Members,

So many interesting and worthy reports have come in that I would like to relate everything that our WI members have accomplished during the past few weeks. However, this is impossible!

The reports coming in from the February meetings suggest that many branches celebrated Valentine's Day. The roll call for **Restigouche, Sawyerville, Dalesville-Louise,** and **Granby Hill** was to bring in a Valentine for shut-ins and senior citizens.

Life members of the Clarendon WI in Pontiac County are from left to right: (back row) Mrs. Thos. Stephens, Mrs. Walter Kilgour, Mrs. Leonard Horner, (front row) Mrs. Dwight McDowell and Mrs. Lloyd Conolly. Absent: Mrs. Harold Hodgins, Mrs. Harry Hodgins, and Mrs. Selisley Howard.

t **Melbourne Ridge** the members rought in cookies for shut-ins. hen they held a contest on a ecorated box for the cookies, nd the boxes were packed at the neeting. This was a worthwhile ndertaking. **Frontier** group was o compose a Valentine verse nd bring in candy for the Senior itizens' home at St. Philippe. his note from **Dunham** — a alentine shower was held for rances and Helene, the two dopted girls at the Dixville ome. Another aspect of the rogram for this same meeting as when a local teacher and ember spoke on English educaon and its future in Quebec. From lissisquoi County, **Fordyce** ranch, Mrs. Wilma Schmeler, resident of the District of edford Association for the lentally Retarded was guest peaker. She gave an enlightening lk on the needs of the retarded ildren and explained the funconing of Camp Garagonu in elighsburg. She also said that nvironment is most important r the well-being of a retarded ild.

tanbridge East was fortunate to ear Miss Frances Walbridge ho had spent 28 years in Kenya s a missionary. Much of her time ad been spent in Nairobi where e ACWW will be held, so her lk proved interesting and timely. ther branches were fortunate hear good speakers. **Grenville** ad Mrs. Annie Goldup, the pubcity chairman of the Quebec eart Foundation, who relayed ery useful information. At **rownsburg,** Mrs. P. Clark said, hen addressing the meeting, here is no better suggestion r Home and Country than elping others." She suggested ving more thought to the monthly otto by elaborating on it at each meeting. At the same meeting Mrs. Atkins spoke and showed slides on a project called Pubelito in Costa Rica. Mrs. Isabel Smith gave a pictorial demonstration and talk on a recent trip to the British Isles and parts of Western Europe to **Jerusalem-Bethany.** The commentator made the trip come alive by relating personal experiences along the way. Mrs. Ken Lamb spoke on home making and local history and displayed pictures and paintings of interesting places in the area to the members at **Aubrey-Riverfield.** Mr. Peter Warren spoke to **Hemmingford** about Amnesty International Canada, an independent organization founded in London, England, in 1961. It is not associated with any religious, political, or government group but works for the release of prisoners detained because of conscientiously-held beliefs. Mrs. Suzelle Barrington, from the local agricultural department, gave a talk and showed a film on landscaping at the **Howick** meeting. At **Huntingdon,** Mrs. Von Brentani, an artist specializing in Eskimo paintings and portraits gave an informative talk on Eskimo life. A guest at **Granby Hill** showed slides on her visit to the Scandinavian countries. At the regular meeting of **Shipton,** a government representative spoke in regard to the forming of a local community service centre in the Danville, Shipton, Asbestos area to serve the needs of senior citizens and handicapped people. A clinic is to be set up for medical and legal needs and for domestic help, too. This is a worth while undertaking.

From Sherbrooke County, too, comes news from branches who have had speakers. Mrs. Jill Brobeck, co-editor of the Eastern Townships Sun, spoke at **Ascot** on different ways the WI could gain publicity. The people in the area are very interested in the progress of this fine paper. At **Lennoxville** Dr. Atto showed an excellent film on a trip to Alaska. Our organization has been very fortunate to be able to listen to such talented people.

Here are some highlights from **Richmond County.** At a **Cleveland** meeting many knitted articles were brought in for Canadian Save the Children and gifts for patients to be sent to Drummondville. Finished diapers were brought in at **Gore** to be sent to the Butters Home and $10 was donated to the Ladies Department of the Richmond Fair. Each **Melbourne Ridge** member brought in a craft they were working on and demonstrated it. A donation of clothing was auctioned with proceeds for the Betty Mason Memorial Fund, and at **Spooner Pond** birthday money was handed in and cards sent to the sick in the community.

The publicity convener for Sherbrooke County stated in her report, "Special articles are to be sent to the press on WI work for many people would read a "special" when they wouldn't read a regular report. How very true this is! It applies to our Macdonald Journal, too. We have received some very good specials. We do need the regular reports, too, though. **Brompton Road** brought in old greeting cards to be sent to Sherbrooke Elementary School for use in school programs. At **Lennoxville** there was an outstanding display of the member's oldest books. Donations were made to Alexander Galt Regional School scholarship fund and to Lennoxville Elementary hot lunch fund. This same branch sold cards for CanSave and UNICEF and raised $375.21, a non-profit gesture.

Some branches are making quilts to sell for funds for needed commodities in their communities. **Black Cape** ladies are working on a quilt and plan to buy pots for the local school to aid with the serving of soup at the noon hour. **Restigouche** have a quilt ready for sale. A patch work throw was made by two ladies from the **Inverness** branch and was to be donated to the Kinnear's Mills Home. **Marcil** are helping to serve soup both at Hope Town and Shigawake-Port Daniel schools. Members from **Grand Cascapedia** were asked to take used cards, old jewellery, and pennants to their next meeting. These were to be sent to Garden Farm Homes in Alberta to be used by crippled children.

The home economics convener from **Sawyerville** told how to clean tarnished silver articles by bringing to a boil a solution of ½ teaspoon salt, ½ teaspoon soda and 2 cups of water. She displayed some articles that had been cleaned this way and then mentioned that if articles were wrapped in aluminum foil after they were cleaned, they would not tarnish.

Canterbury's home economics convener presented brochures: Your Market Basket — Fill It Wisely and Supermarket Strategy which discusses, among other things, how goods are arranged on shelves to lure buyers. The agriculture convener from the same branch read an article from the Macdonald Journal on how yield in the garden could be doubled by using a mulch of clear or black plastic.

Stanbridge East were delighted to report that a Life Membership was presented to Mrs. Flora (Clifford) Rhicard, an active member at both local and county level. A copy of a letter sent to the Solicitor-General Mr. Francis Fox, MP for Argenteuil-Deux Montagnes was read by the secretary at the Jerusalem-Bethany meeting.

The meeting at **Dewitville** took the form of a potluck luncheon at Walshaven Home. Invited guests included all tenants in the apartments, members of Ormstown WI, and participants in the Meals-on-Wheels program. In all about 100 people enjoyed a delicious meal of cold meat, hot casseroles, salads, pickles, crusty bread, and a variety of desserts, including pies and trifles. Later Mrs. Paul Hacker showed slides of Kenya where she and her husband the Rev. Hacker had lived. She gave a picturesque view of life there. This luncheon was a fine example of Quebec culture that we don't hear much about. English and French enjoyed each other's company regardless of language.

The convener from Hemmingford reported that Montreal is sponsoring a campaign to cut down and control the number of dogs and cats in the area as many thousands have to be destroyed every year. Last year 35,432 dogs, 57,923 cats, and 3,160 other animals were brought to the centre. We learn also from this branch that 54,000 women in Canada will celebrate the 80th anniversary of the WI this year. This group has done more than any other to improve rural life.

Donations were generous. **Dundee** supplied funds to have carpets installed on the stage of their municipal hall and **Granby West** donated to the building fund at Macdonald College. Some branches that supported senior citizens' homes in their areas were: **Arundel, Jerusalem-Bethany, East Clifton,** and **Canterbury.** Among the branches that contributed to CanSave were **Waterloo, Black Cape, East Angus,** and **Granby West.** A member of the latter branch handed in a crocheted afghan and tablecloth to be raffled to raise funds. Help for cancer patients was given by **Shipton** and **East Angus** along with others. **Richmond Hill** supported the Farmer's Club, **Bury** the winter carnival, and **Spooner Pond** the Richmond Fair. Congratulations to **Fordyce** and **Richmond Hill!** Each branch has a new member.

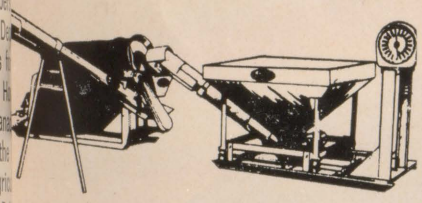
This news from Pontiac County was brought to my attention. From **Clarendon** we read that instead of meeting in December and January, the members visited St. Joseph's Manor in December, taking lunch and treats for the patients. Mrs. Leonard Horner showed slides from Canada and the U.S.A. In January the ladies served lunch to the Agriculture Annual Meeting. Mrs. Rabb and Mrs. Routliffe of **Fort Coulogne** were at the meeting. At the **Wyman WI** the roll call was answered by 11 members and one visitor. The agriculture convener read an item, "Fire Insurance, do you have enough?" At **Beechgrove** the annual weigh in was held to remind the ladies that extra weight means extra stress on the heart. February was Heart Month. Two mottos are: More diets begin in a dress shop than in a doctor's office. The work will wait while you show the child the rainbow, but the rainbow won't wait while you do the work.

During these last few days of February, with the snow covered trees and buildings, we are all looking forward to April (when you will be reading this), for it is a special month. We can't depend too much on the weather, but Nature's quiet work is going on. The dark earth is alive with so much promise. A writer said "April is even lovelier than June. There is a mystery about it that whispers and sings like a love song." April is that special!

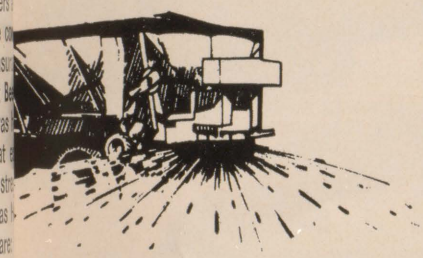
Mrs. Gladys C. Nugent,
QWI Publicity Convener.

YOUR LOCAL CO-OP OFFERS YOU TOTAL CROP SERVICE

Complete Fertilizer Service

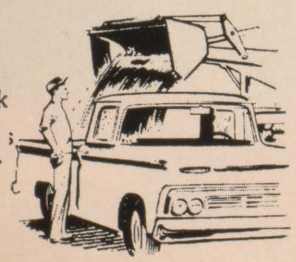


t the exact nitrogen, phosphate, tash formula that you need for ur yield goal. CO-OP custom nding returns the most for your op investment.



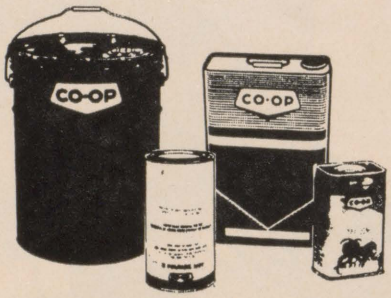
ve the cost of labour and uipment investment by letting O-OP deliver and spread your exact rtilizer formula.

pplement nitrogen 41%N and/or %N non-pressurized available at ur CO-OP and all the equipment cessary to apply it.



an save king up CO-OP er in bulk g. Your P has fertilizer to fit plant needs.

Chemical Headquarters



Your Co-operative has the complete range of chemicals necessary to control just about any condition during your crop cycle. *Free booklets and instructions are available.*

Seed Varieties

CO-OP has the seed to give you a wide choice of varieties suitable for Quebec soils, climate and required yields.

Co-ordinated Programs

Every year, your Co-operative publishes the latest information and recommended growing techniques in a series of crop production guides. *Ask for your free copies.*

Grain Marketing

CO-OP has more grain handling and marketing facilities than anyone else. Talk to your CO-OP Grain Marketing people about marketing your grain.

Coopérative Fédérée de Québec
Crop Products Department
1055, rue du Marché Central
Montréal, P.Q. H4N 1K3

You alone ... Roll your own

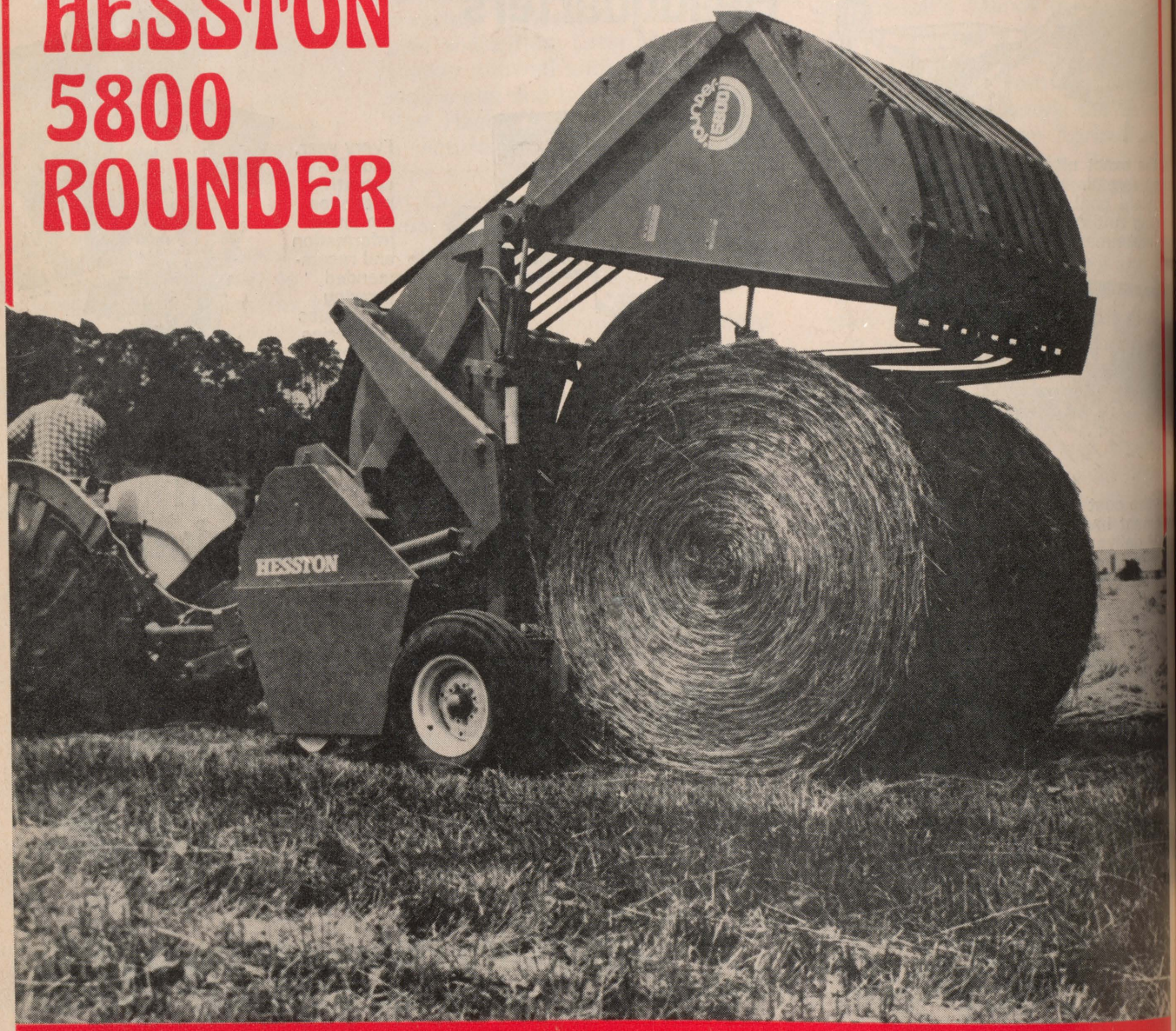
Now you alone can roll your own giant round bales with the new Hesston 5800 Rounder.

The 5800 offers huge capacity in a one-man machine that builds uniform core-forming and a tightly compressed bale from the inside out. The end result is bales up to 1500 lbs. with high density, that stores longer with less spoilage.

The Hesston 5800 rolls up bales at 6 to 10 tons per hour.

So see your Fédérée-Hesston Dealer first chance you get and .... roll your own.

HESSTON 5800 ROUNDER



COOPÉRATIVE FÉDÉRÉE DE QUÉBEC

Farm Machinery Department 1055 Central St. West, Montreal, Que. H2P 2W2